State of Illinois
DEPARTMENT OF TRANSPORTATION
Bureau of Local Roads and Streets

SPECIAL PROVISION FOR BITUMINOUS STABILIZED BASE COURSE PLANT MIX

Effective February 20, 1963
Revised January 1, 2002

All references to Sections or Articles in this specification shall be construed to mean a specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

Description. This work shall consist of constructing a bituminous stabilized base course consisting of a mixture of aggregates and bituminous material on a prepared subgrade. Each layer of the base course shall be less than 100 mm (4 inches) compacted thickness.

Materials. Materials shall meet the requirements of the following Articles of Section 1000 - Materials.

Item	Article/Section
(a) Coarse Aggregate (Note 1)	1004.03, 1004.04
(b) Bituminous Materials (Note 2)	1009.01 - 1009.04,1009.07, 1009.09, 1009.10

Note 1. The granular material shall be of gradation CA-6 or CA-10

Note 2. The contractor may use any one of the types of bituminous materials as shown in the table below. When more than one grade is shown for a particular method the Department reserves the right to specify the grade which shall be used.

Type of Construction	Bituminous Material
Prime Coat	MC-30 PEP
Base Course	MC-250, MC-800, SC-250, SC-800 HFE-150, HFE-300, MS-1, MS-2, CMS-1, CMS-2, SS-1, CSS-1

The same gradation of aggregate and grade of bituminous materials shall be used throughout the work.

Equipment. Equipment shall meet the requirements of the following articles of Section 1100 - Equipment.

Item	Article/Section
(a) Tandem Rollers	1101.01 (e)(1)
(b) Three-wheel Rollers	1101.01 (e)(2)
(c) Pneumatic-tired Rollers	1101.01 (a) or (c)
(d) Vibratory Roller	1101.01 (g)
(e) Mechanical Sweepers	1101.03
(f) Hot Mix Plant (Note 1)	1102.01
(g) Spreaders	1102.04

(h) Pressure Distributor 1102.05
(i) Heating Equipment 1102.07
(j) Graders 1102.10

Note 1. For bituminous aggregate mixture using Medium Curing Liquid Asphalt, a hot-mix plant conforming to Article 1102.01 will be required except: Articles 1102.01(a)(3), (b)(2), (b)(6), (b)(7), (b)(8), (b)(9), (c)(1), and (c)(5) shall not apply.

Metal housing or covers will not be required for the hot elevator, weigh hopper, and mixer. Aggregate feeders shall be of the apron, drum, reciprocating, or other type approved by the Engineer.

For bituminous aggregate mixture using Emulsified Asphalt Type, the above-described hot-mix plant may be used with modifications, or a plant meeting the following requirements may be used: The plant shall be continuous mixing or batch-type plant of approved design having a nominal capacity of not less than 54 metric tons (60 tons) per hour. The plant shall include a device for obtaining separate and accurate volume or weight measurements of the aggregate and bituminous material used in the bituminous mixture. The device shall be a type approved by the Engineer. The maximum capacity of the pug mill mixer shall be set by the Engineer.

At least one 38,000 liter (10,000 gallon) storage tank shall be located at the plant site for the storage of the emulsified asphalt. Suitable feeders shall be provided for conveying the aggregate to the pug mill mixer. A scalping device shall be provided for removing the oversized material.

Subparagraph (e) applies

CONSTRUCTION REQUIREMENTS

General. Except in specific cases when permitted by the Engineer in writing, this work shall be done only between April 15 and September 15. Bituminous materials shall be applied and bituminous mixtures placed only when the temperature of the subgrade, measured 50 to 75 mm (2 to 3 inches) below the surface, is above 10 °C (50 °F), and the air temperature in the shade is above 4 °C (40 °F). No work shall be started if local conditions indicate rain is imminent.

The subgrade shall be cleaned of all loose dirt, debris or other materials prior to placing any bituminous mixture thereon.

Sequence of Work. The construction operations shall be undertaken in the following sequence:

(a) Preparation of subgrade.
(b) Preparation and application of bituminous material for the prime coat.
(c) Preparation, transporting, spreading and rolling bituminous mixture.

Preparation of Subgrade. The subgrade shall be prepared in accordance with Section 301. It shall be compacted as specified in Article 301.04.

Preparation and Application of Bituminous Materials for Prime Coat. The bituminous material for the prime coat, if required by the Engineer, shall be prepared according to Article403.07 and applied according to Articles403.09 and 403.11.

The bituminous material for the mixture shall be transferred to the asphalt tanks and heated to the temperatures as follows:

	Temperature	
Type of Bituminous Material	Minimum	Maximum
Emulsified Asphalts	Workable	85 °C (185 °F)
Medium Curing Liquid Asphalts	Workable	Flash Point
Slow Curing Liquid Asphalts	Workable	Not to exceed Flash Point or 135 °C (275 °F)

Composition of Mixture. The base course mixture prepared by the methods of mixing described herein shall conform to the following composition limits by weight:

Ingredient	Percent by Weight
Aggregate ……	96.0 to 97.5%
Residual Bitumen ……	2.5 to 4.0%

The percentage of residual bitumen shall be set by the Engineer. The right is reserved to make such changes in the proportions of bituminous material and aggregates, as the Engineer may consider necessary within the limits of the specifications.

Preparation of Emulsified Bituminous Mixture. This work shall be done in accordance with the applicable portions of Article 405.08.

Aggregate containing more than 6.5% moisture shall be stockpiled at the plant site before it is used. Material containing more than 10% moisture shall be dried in a manner acceptable to the Engineer before being placed in the stockpile. Aggregates shall contain sufficient moisture to assure coating of all particles. When conditions require that water be added, the addition of water shall be interlocked with the flow of aggregate and bitumen into the mixer. Aggregates containing more than 6.5% but not more than 10% moisture may be dried at the option of the contractor, and at his expense, by adding hydrated lime at a maximum rate of 4.5 kg (10 pounds) of lime per metric ton (ton) of aggregate. Aggregate containing more than 10% moisture shall not be used.

The base course mixture shall be stockpiled until the free and absorbed moisture content of the mixture is 5% or less. However, the contractor shall not be required to stockpile the material more than 30 days.

The base course mixture shall be prepared in an approved mixer. When the aggregate is in the mixer, the bituminous material shall be added and mixing continued until a homogenous mixture is produced in which all particles of the aggregate are uniformly coated. The mixing period shall be determined by the Engineer.

Preparation of Liquid Asphalt Bituminous Mixture. This work shall be done in accordance with the applicable portion of Article 405.08.

Transportation. This work shall be done in accordance with the applicable portions of Article 405.10.

Spreading. The mixture shall be placed according to applicable portions of Article 405.11 except that a mechanical aggregate spreader may be used in lieu of the spreading and finishing machine.

Compaction. This work shall be done in accordance with Article 404.11.

No traffic shall be allowed upon the base mixture prior to the initial rolling.

The base mixture shall be compacted to 100% maximum density. The maximum density shall be determined in accordance with applicable portions of Article 351.05(b).

Surface Test. After the final layer of base course mixture has been compacted, the surface shall be tested for smoothness by means of a 5 m (16 ft) straightedge placed parallel to the centerline of the improvement, parallel to the grade line in each wheel lane and touching the surface. Ordinates measured from the face of the straightedge to the pavement shall at no place exceed 10 mm (0.375 inch). If the variation from a true surface exceeds 10 mm (0.375 inch), the entire area so affected shall be corrected as directed by the Engineer.

Tolerance in Thickness. It is the intent that the base course shall be constructed to the nominal thickness shown on the plans. Thickness determinations shall be made at such points as the Engineer may select. When the constructed thickness is less than 90% of the nominal thickness shown on the plans, stabilized base mixture shall be added to obtain the required design thickness.

Method of Measurement. Bituminous material will be measured for payment as specified in Section 1009. Bituminous stabilized base course will be measured for payment in metric tons (tons) or square meters (square yards) of the thickness specified. The unit of measurement will be shown on the plans.

(a) When the unit of measurement for bituminous stabilized base course is the metric ton (ton), the bituminous mixture will be measured in accordance with Article 405.15, except payment will not be made in excess of 108 percent of the amount specified by the Engineer, nor for materials used in the base mixture placed outside the design width plus 150 mm (6 inches).

(b) When the unit of measurement for bituminous stabilized base course is the square meter (square yard), the bituminous mixture will be measured in place and the area computed in square meter (square yards), or as provided in Article 202.07(a). The width for measurement will be as shown on the plans.

Basis of Payment. This work will be paid for at the contract unit price per liter (gallon) for BITUMINOUS MATERIALS (PRIME COAT) or per metric ton (ton) for BITUMINOUS MATERIALS (PRIME COAT) and per metric ton (ton) for BITUMINOUS STABILIZED BASE COURSE, or per square meters (square yard) for BITUMINOUS STABILIZED BASE COURSE, measured as specified herein.

The cost of preparation of the subgrade shall be included in the cost of the Bituminous Stabilized Base Course Plant Mix, unless otherwise specified, and no additional compensation for this work will be allowed.

If provided as a pay item, the work in connection with the preparation of the base will be measured as specified in Section 358.